10/810763

CofC

OIPE DEC 04 2006 TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313 on November 28, 2006.

Doran R. Pace, Patent Attorney

REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 CFR 1.322
Docket No. RRA-101T
Patent No. 7,060,210

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Robert Roberts
Issued	:	June 13, 2006
Patent No.	:	7,060,210
For	:	Method of Processing Colloidal Size Polytetrafluoroethylene Resin Particles to Produce Biaxially-Oriented Structures

Mail Stop Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CERTIFICATE OF CORRECTION
UNDER 37 CFR 1.322 (OFFICE MISTAKE)

Sir:

A Certificate of Correction (in duplicate) for the above-identified patent has been prepared and is attached hereto.

In the left-hand column below is the column and line number where errors occurred in the patent. In the right-hand column is the page and line number in the application where the correct information appears.

Patent Reads:	**Application Reads:**
Column 3, line 36:	Page 5, line 21:
"theologically"	-- rheologically --.

Certificate
DEC 06 2006
of Correction

DEC 07 2006

J:\RRA\101T\PTO-Misc\COC.Req.doc/DNB/amc-kmm

Patent Reads:	**Amendment Under 37 CFR §1.116 dated February 8, 2006, page 3 (original claim 69 renumbered as claim 8; original claim 68 renumbered as claim 7) reads:**
Column 14, line 3:	Page 3 of Amendment, line 16:
"The method of claim 1"	--The method of claim 68--.

Patent Reads:	**First Response and Amendment dated April 25, 2005, page 13 (original claim 89 renumbered as claim 17) reads:**
Column 14, line 46:	Page 13 of Amendment, line 2 of claim 89:
"300 Centigrade"	--300 degrees Centigrade --.

A true and correct copy of page 5 of the specification as filed, the Amendment dated February 8, 2006, the First Response and Amendment dated April 25, 2005, and a copy of the Notice of Allowability (indicating that allowed claims 62-70 and 82-89 have been renumbered as 1-17) which support Applicant's assertion of the errors on the part of the Patent Office accompanies this Certificate of Correction.

Approval of the Certificate of Correction is respectfully requested.

Respectfully submitted,

Doran R. Pace
Patent Attorney
Registration No. 38,261
Phone No.: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

DRP/amc

Attachments: copy of page 5 of the specification
copy of Amendment dated February 8, 2006
copy of First Response and Amendment dated April 25, 2005
copy of the Notice of Allowability

DEC 07 2006

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,060,210 Page 1 of 1

APPLICATION NO.: 10/810,763

DATED : June 13, 2006

INVENTOR : Robert Roberts

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 3,
Line 36, "theologically" should read -- rheologically --.

Column 14,
Line 3, "The method of claim 1" should read –The method of claim 7--.
Line 46, "300 Centigrade" should read --300 degrees Centigrade --.

MAILING ADDRESS OF SENDER:
Saliwanchik, Lloyd & Saliwanchik
P.O. Box 142950
Gainesville, FL 32614-2950

DEC 07 2006

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,060,210 Page 1 of 1

APPLICATION NO.: 10/810,763

DATED : June 13, 2006

INVENTOR : Robert Roberts

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 3,
Line 36, "theologically" should read -- rheologically --.

Column 14,
Line 3, "The method of claim 1" should read –The method of claim 7--.
Line 46, "300 Centigrade" should read --300 degrees Centigrade --.

MAILING ADDRESS OF SENDER:
Saliwanchik, Lloyd & Saliwanchik
P.O. Box 142950
Gainesville, FL 32614-2950

DEC 07 2006

DESCRIPTION OF THE INVENTION

The preparation of the resin and/or feed components prior to extrusion is an important feature of this novel method of manufacturing planar biaxially-oriented sheet and shapes.

This first step comprises the freeing of the colloidal particles from the coagulation particle aggregate by cutting the aggregate in a wetting liquid. It is most important that the cutting action take place in a liquid, which readily wets or spreads on the fluoropolymer surfaces. Defined as a liquid whose contact angle is as near zero as possible when in contact with a fluoropolymer surface, Isopar H, a hydrocarbon, is such a liquid and is available from Exxon®. Once this liquid penetrates the agglomerate skin, it passes freely between the colloidal size particles, by capillarity, to lubricate their surfaces and make each colloidal particle able to move freely and substantially independently. Cutting the aggregate size particle skin, wherein the average size of each particle is 500 microns, is important to enable the colloidal size particle release and permit the free movement of these primary colloidal size particles, which average 0.2 microns in size. The smaller size particle allows a much more homogenous and intimate movement of particles and especially permits the incorporation of micron size fillers and additives previously prohibitive by the art process. Paste extrusion is best accomplished where flow in the extrusion barrel and die is streamlined to eliminate turbulence and mixing, ideally defined rheologically as plug flow. In the past, the wide range of much larger size particles and their containers (skins) plus fillers did not fit this model.

In the cutting step 1 part of coagulated dispersion, resin is added to 20 parts of a wetting liquid, such as Isopar H or the like, at ambient temperature. The

COPY

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on February 8, 2006.

Jenna M Morrison
Jenna M. Morrison, Patent Attorney

AMENDMENT UNDER 37 CFR §1.111
Examining Group 1732
Patent Application
Docket No. RRA-101T
Serial No. 10/810,763

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner	:	Stefan Staicovici, Ph.D.
Art Unit	:	1732
Applicant	:	Robert Roberts
Serial No.	:	10/810,763
Filed	:	March 26, 2004
Conf. No.	:	7651
For	:	Method of Processing Colloidal Size Polytetrafluoroethylene Resin Particles to Produce Biaxially-Oriented Structures

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

AMENDMENT UNDER 37 CFR §1.111

Sir:

In response to the Office Action dated January 20, 2006, please amend the above-identified patent application as follows:

In the Claims

Claims 1-61 (canceled).

Claim 62 (currently amended). A method of processing colloidal size polytetrafluoroethylene resin particles by plug flow in an unmelted state while in a hydrostatic coalescible condition to produce biaxially-planar oriented structures comprising the steps of:

a. releasing said colloidal size polytetrafluoroethylene resin particles from coagulated dispersion aggregates at high shear in a solvent to create a mixture, wherein said particles are approximately 5 to 10 microns in size and said solvent is capable of wetting polytetrafluoroethylene surfaces;

b. subjecting said mixture to high shear mixing;

c. filtering said mixture to retain approximately 17 to 20 percent liquid to form a hydrostatic pressure coalescible filter cake; and

d. processing said filter cake, said processing step comprising

i) first uniaxially paste extruding said filter cake composition to produce a uniaxial planar oriented polytetrafluoroethylene structure having longitudinal stress containing approximately 17 to 20 percent lubricant; and

ii) applying a means of re-orienting said uniaxially planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant approximately 90 degrees to the initial uniaxial extrusion direction, wherein said means of re-orienting imparts a transverse stress to said structure, wherein said means of re-orienting comprises a single step of re-orientation for a sufficient period of time so that the transverse stress imparted by said re-orienting and the longitudinal stress imparted by said uniaxial paste extrusion are about equal.

Claim 63 (previously presented). The method of claim 62 wherein the means of re-orienting is rolling.

Claim 64 (previously presented). The method of claim 62 wherein said means of re-orienting is calendering.

Claim 65 (previously presented). The method of claim 62 wherein the means of re-orienting is blowing.

Claim 66 (previously presented). The method of claim 62 wherein the means of re-orienting is re-extrusion.

Claim 67 (previously presented). The method of claim 62 wherein said biaxial planar oriented polytetrafluoroethylene structure is a sheet.

Claim 68 (previously presented). The method of claim 62 wherein biaxial planar oriented polytetrafluoroethylene structure is a tube.

Claim 69 (previously presented). The method of claim 68 further comprising:

e) slitting said biaxial planar oriented polytetrafluoroethylene tubular structure; and

f) laying open said structure to form a sheet.

Claim 70 (previously presented). The method of claim 62 further comprising the step after step b of:

c. adding solid particles approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume.

Claims 71-81 (canceled).

Claim 82 (previously presented). The method of claim 67 wherein said subjecting step further comprises adding solid particles approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume, said means of re-orienting is rolling; and

laminating said rolled biaxial planar oriented polytetrafluoroethylene structure by compression.

Claim 83 (previously presented). The method of claim 67 wherein said means of re-orienting is calendering, wherein said subjecting step further comprises adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume, and laminating said calendered biaxial planar oriented polytetrafluoroethylene structure by compression.

Claim 84 (previously presented). The method of claim 67 wherein said means of re-orienting is re-extrusion, wherein said subjecting step further comprises adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume, and laminating said re-extruded biaxial planar oriented polytetrafluoroethylene structure by compression.

Claim 85 (previously presented). The method of claim 82 wherein said compression is at a pressure ranging from 100 to 1,000 psi.

Claim 86 (previously presented). The method of claim 83 wherein said compression is at a pressure ranging from 100 to 1,000 psi.

Claim 87 (previously presented). The method of claim 84 wherein said compression is at a pressure ranging from 100 to 1,000 psi.

Claim 88 (previously presented). The method of claim 82 further comprising applying heat up to 300 degrees Centigrade to the laminated, rolled biaxial planar oriented PTFE structure to plasticize and assist the forming and shaping of the sheet.

Claim 89 (previously presented). The method of claim 83 further comprising applying heat up to 300 degrees Centigrade to the laminated, calendered biaxial planar oriented PTFE structure to plasticize and assist the forming and shaping of the sheet.

Claims 90-106 (canceled).

Remarks

Claims 62-89 and 96-101 are pending in the subject application. By this Amendment, Applicant has canceled claims 71-81 and 96-101 and amended claim 62. Claim 62 has been amended to correct the inadvertent omission of the conjunction "and" in the Amendment dated December 23, 2005. Accordingly, claims 62-70 and 82-89 are currently before the Examiner. Favorable consideration of the pending claims is respectfully requested.

As an initial matter, Applicant gratefully acknowledges the Examiner's indication that claims 62-70 and 82-89 are directed to allowable subject matter.

Claims 71-81 have been rejected under 35 U.S.C. §112, second paragraph, as indefinite. Applicant has canceled claims 71-81, thereby rendering this rejection moot.

Claims 71-81 and 96-101 have been rejected under 35 U.S.C. §102(b) as anticipated by Roberts (U.S. Patent No. 3,556,161). Applicant has canceled claims 71-81 and 96-101, thereby rendering this rejection moot.

In view of the foregoing remarks, Applicant believes that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

Applicant invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Jenna M. Morrison
Patent Attorney
Registration No. 55,468
Phone No.: 352-375-8100
Fax No.: 352-372-5800
Address: P.O. Box 142950
Gainesville, FL 32614-2950

JMM/kmm

THE LIVINGSTON FIRM
ATTORNEYS AT LAW
PATENTS ◆ TRADEMARKS ◆ COPYRIGHTS

963 TRAIL TERRACE DRIVE
NAPLES, FLORIDA 34103

TELEPHONE: 239-262-8502
FACSIMILE: 239-261-3773
TOLL FREE: 800-548-4332

EDWARD M. LIVINGSTON
REGISTERED PATENT ATTORNEY

ANGELA M. MILLER
REGISTERED PATENT ATTORNEY

SPECIAL COUNSEL:
EDWIN W. "NED" OLDHAM
REGISTERED PATENT ATTORNEY
ADMITTED IN OHIO ONLY

April 25, 2005

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ED933742668US

Application of	:	Robert Roberts
Serial No.	:	10/810,763
Filing Date	:	03/26/2004
For	:	METHOD OF PROCESSING COLLOIDAL SIZE POLYTETRAFLUOROETHYLENE RESIN PARTICLES TO PRODUCE BIAXIALLY-ORIENTED STRUCTURES
Atty. Docket No.	:	04-5502
Examiner	:	David T. Beck
Art Unit	:	1732

Dear Sir:

Enclosed is Applicant's Response and Amendment responsive to an Office communication bearing a mailing date of January 24, 2005, together with a postcard for your convenience in acknowledging receipt of this enclosure.

Should you have questions, please do not hesitate to contact the undersigned

Respectfully submitted,

Edward M. Livingston
Pat. Atty. Reg. No. 28,523

EML:amm
Enclosures: First Response and Amendment
Postcard

pc: Applicant (w/encs.)

COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE:	Application of	:	Robert Roberts
	Serial No.	:	10/810,763
	Filing Date	:	03/26/2004
	For	:	METHOD OF PROCESSING COLLOIDAL SIZE POLYTETRAFLUOROETHYLENE RESIN PARTICLES TO PRODUCE BIAXIALLY-ORIENTED STRUCTURES
	Atty. Docket No.	:	04-5502

EXAMINER: David T. Beck
ART UNIT: 1732

FIRST RESPONSE AND AMENDMENT

Honorable Commissioner for Patents
Mail Stop Amendment
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is responsive to office action bearing a mailing date of January 24, 2005.

SPECIFICATION AMENDMENTS

Please add the following paragraphs beginning on page 5, line 1, as follows:

DESCRIPTION OF THE INVENTION

TERMS AND LANGUAGE OF THE PROCESS

LAMELLAE - Thin, plate-like structures in the micron thickness range. If present, lamellae may be viewed microscopically in microtomed cross-sections. Also referred to as fault lines.

LAMINATIONS - Layers of sheet composition in the mil thick range and above. Lamination may be viewed visually.

CALENDERING (TO ORIENT) - Passing a material between two uniform clearance even speed rolls rotating at a surface speed of approximately two feet per minute, reducing the thickness of the processed material by approximately 50 percent with each pass through the calendar at 90 degrees to the previous pass, to produce shear and working for the purpose of introducing biaxial orientation.

CALENDERING (TO COMPACT ONLY) - A single pass through a calender for compaction only, to laminate layers of a composite consisting of two or more layers. Shear and working of the resin is not the objective and orientation should not occur.

ROLLING - Results are equivalent to calendering, the choice is a matter of preference to accomplish a particular operation. Rolling is performed on a flat level surface. Accurate sheet caliper is more difficult to maintain than with calendering. Two spacers at both ends of the roll control thickness.

> **Note:** When performed in identical sequence, rolling and calendering have proven to be equal.

FILLER - In its original context, a filler was a material added to extend the ability and reduce the cost of a polymeric material. As time passed, certain fillers were found to have functional advantages such as reducing deformation, reducing cold flow or increasing friction or improving thermal and electrical properties of the polymer.

ADDITIVES - Additives have usually had a special function, such as to add color, to improve adhesion, to foster nucleation and so forth.

Note: In essence, both fillers and additives are materials added for specific purposes. As years have passed, these two terms have, at times, been used interchangeably.

HYDROSTATIC PRESSURE COALESCIBLE COMPOSITION - A homogenous mixture of polytetrafluoroethylene (PTFE) colloidal resin particles, which may or may not contain submicron particulate solids up to 25 microns in size, in a liquid that wets the surface of PTFE and solids, the liquid component maintaining a volume percentage between 17 and 20 percent of the mix in compressed void free form. The condition is dependent upon the particle packing of the total solids component. Below 17 percent there is insufficient liquid to fill voids between the particles, thus promoting cavitation. Above 20 percent there is an overabundance of liquid, which promotes turbulence. In the 17 to 20 percent liquid zone, capillary forces in the spaces between packed particles are developed which draw the particles together. The resulting cohesion of particles is responsible for the surprising strength developed before a PTFE matrix is developed to further aid the development of strength.

PASTE EXTRUSION - Extrusion of a hydrostatic pressure coalescible composition is called paste extrusion which is performed at room temperature; the colloidal PTFE resin component has never been melted. The extrusion mold and its die components are streamlined to prevent cavitation and turbulence. This form of extrusion involves plug flow; the flow is uniaxial, or biaxial planar (also radial in special forming operations). Since the flow is of the plug type, particles all move together and no mixing occurs. For example, a tube in the extruder barrel remains a tube when extruded, but has a much smaller diameter and a thinner wall. Coagulated dispersion resin, often called fine powder, is actually a loosely aggregated particle whose average aggregate size is 500 microns, which is far from a fine powder.

PARTICLE SIZE - Particle size in paste extrusion is very important, but not critical to, the extrusion process if particle size remains in the recommended range, preferably up to and including 25 microns as described in this invention. Sizes above 25 microns can be employed in certain applications but rarely larger than 50 microns. Examples I and II demonstrate why PTFE particles should be colloidal and the advantage

derived in obtaining a homogenous compound in the liquid blending method. For pore forming applications, the desired fugitive particle size is generally below 10 microns and for special microfiltration applications particle sizes below 1 micron are desirable.

MATRIX TENSILE STRENGTH - The tensile strength based on the total cross-section, corrected for the percentage fo voids in the structure employed for determining the tensile strength of porous compositions of PTFE.

LUBRICANT - The wetting liquid employed in paste extrusion is often described as a lubricant.

FISH-TAIL DIE - A stream-lined die shaped like a fish tail employed for paste extruding tape and film.

WETTING LIQUID - A low surface tension liquid (0 to 19 dynes/cm) that will spread on contact with a PTFE surface. Isopar H, an isoparafinic liquid often employed as a solvent but used here as a wetting and neutralizing medium to permit uninhibited mixing of particulate materials, sometimes is referred to in paste extrusion as a lubricant. Isopar H is selected here because of its inherent purity, low heat of vaporization for fast evaporation, low odor, high auto-ignition temperature and compliance with Food and Drug Administration (FDA) requirements for food and skin contact.

PARTICULATE MATERIALS

(Additives and Fillers)

An advantage of the present invention, as well as the co-pending application Serial Number 10/401,995) and the Roberts 3,556,161 patent lies in recognizing the inherent ability to compound, or mix, and process particulate materials in different material forms, such as solids, fibers, platelets, porous particulates, nanoparticles, and the like, with other special particulate particle forms of particulate PTFE-type resins homogeneously in a wetting liquid environment. The group of mixed particulate materials has grown over the years.

In the early years up until the 1960s, solid materials were tagged with the name "fillers" and consisted primarily of particulate carbon, graphite, bronze, chopped glass fibers and several other basic materials, employed as inexpensive extenders. In the years that followed, a much broader range of materials have been included and the term

"additives" has come into use, for example, pigments for color coding and polymers. Ever since the 1960s, both fillers and additives have been used interchangeably. Today, fillers and additives are added to provide many functional purposes and serve to improve and share the valuable properties of PTFE as a matrix for new products. For the above reasons, it is more accurate to name the solid particulate and its special function.

Polymeric Additives (Particle Solids)

A. Particulate fluorocarbon resins that show adhesion to PTFE resin, 1) perfluoroalkoxy tetraethylene copolymer resin (PFA), 2) ethylenechlorotrifluoroethylene copolymer resin (E-CTFE), 3) ethylenetetrafluorothylene copolymer resin (E-TFE), 4) poly(vinylidine fluoride) resin (PVDF), 5) tetrafluorothylenehexafluorotruoropropylene copolymer resin (FEP), and 6) poly(chlorotrifluorothylene) resin (CTFE).

B. Particulate polyether resins that show adhesion to polytetrafluoroethylene resin (PTFE), 1) polyether ether ketone resin (PEEK), 2) polyether ketone resin (PEK), and 4) polyethersulfone resin (PES).

C. Particulate polymethyl methacrylate is a fugitive resin that will decompose when heated above its melting point. In particulate form, it will mix with PTFE resin and leave voids in the PTFE matrix replicating the size of each fugitive particle.

D. Particulate polytetrafluoroethylene (PTFE) resin molding grade granular may be added beneficially up to about 50 percent of PTFE content in many compositions with colloidal particles alone or with other particulate materials. This addition will save resin cost since granular PTFE is less expensive. Particulate modified granular forms may also be added, for example "TFM", marketed by Dyneon, for compression molding applications as a modified PTFE (1705) resin.

Inorganic Fillers (Particulate Solids)

A. Particulate crystalline inorganic materials that are similar in chemical resistance to PTFE, a nitride, a diboride, silicon carbinde, zirconium carbide, tungsten carbide and boroncarbide.

B. Particulate metal powders, such as gold, silver, platinum, iron, aluminum, copper, bronze, titanium and the like.

C. Particulate materials added to impart thermal and electrical conductivity,

such as carbon, graphite, silicon carbide, gold, silver and metal oxides.

D. Particulate fillers to control the friction and wear of PTFE articles, such as silicon carbide, graphite, molybdenum, chopped glass fibers and mica.

E. Particulate fillers, such as mica to improve electrical properties and carbon and graphite to conduct electricity, ceramic oxide catalysts suspended in PTFE porous membranes employed in fuel cell constructions as catalysts.

F. In some instances, for example, in making PTFE porous composition, particulate materials are added that are fugitive and can be removed by chemicals (calcium carbonate) or water, (sodium chloride).

In summary, any material capable of withstanding the fusion temperature range of PTFE (342 to 400 degrees Centigrade), may be included as long as it is useful in some way. **Caution:** do not mix explosive materials, such as thermit process components. Most importantly, in order to achieve good homogenous mixing and avoid interference with the plug flow of the paste extrusion process, it is preferable that particles be less than 25 microns in size. This size prevents cavitation and turbulence, which is detrimental to the paste extrusion process. There will be cases where particles somewhat larger than 25 microns will be an advantage, such as where the solid material added is included to improve thermal conductivity. There will also be cases where it is highly desirable to have extremely small particles, for example, in preparation of porous membrane structures and filters where the particle size will determine the pore size after the particles are extracted from the PTFE matrix.

It is equally important that the PTFE particles be small for the same reason why colloidal PTFE works and coagulated dispersion resin is a failure in the paste extrusion process where solid particulate are included. Today's art paste extrusion processes are incapable of paste extruding solid particulate particles successfully because the commercially available PTFE resin particle size averages 500 microns. A solids content of 1 to 2 percent used for pigmentation is the only useful application practiced today in the art.

CLAIM AMENDMENTS

Please amend the claims as follows:

1. - 61.(*canceled*)

62.(*new*) A method of processing colloidal size polytetrafluoroethylene resin particles by plug flow in an unmelted state while in a hydrostatic coalescible condition to produce biaxially-planar oriented structures comprising the steps of:

a. releasing said colloidal size polytetrafluoroethylene resin particles from coagulated dispersion aggregates at high shear in a solvent to create a mixture, wherein said particles are approximately 5 to 10 microns in size and said solvent is capable of wetting polytetrafluoroethylene surfaces;

b. subjecting said mixture to high shear mixing;

c. filtering said mixture to retain approximately 17 to 20 percent liquid to form a hydrostatic pressure coalescible filter cake;

d. uniaxially paste extruding said filter cake composition to produce a uniaxial planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant;

e. applying a means of re-orienting said uniaxially planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant approximately 90 degrees to the initial uniaxial extrusion direction.

63.(*new*) The method of claim **62** wherein the means of re-orienting is rolling.

64.(*new*) The method of claim **62** wherein the means of re-orienting is calendering.

65.(*new*) The method of claim **62** wherein the means of re-orienting is blowing.

66.(*new*) The method of claim **62** wherein the means of re-orienting is re-extrusion.

67.(*new*) The method of claim **62** wherein said biaxial planar oriented polytetrafluoroethylene structure is a sheet.

68.(*new*) The method of claim **62** wherein biaxial planar oriented polytetrafluoroethylene structure is a tube.

69.(*new*) The method of claim **68** further comprising steps after step f of:

g. slitting said biaxial planar oriented polytetrafluoroethylene tubular structure; and

h. laying open said structure to form a sheet.

70.(*new*) The method of claim **62** further comprising the step after step b of:

c. adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume.

71.(*new*) A biaxially planar oriented structure formed by releasing said colloidal size polytetrafluoroethylene resin particles from coagulated dispersion aggregates at high shear in a solvent to create a mixture, wherein said particles are approximately 5 to 10 microns in size and said solvent is capable of wetting polytetrafluoroethylene surfaces; subjecting said mixture to high shear mixing; adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume; filtering said mixture to retain approximately 17 to 20 percent liquid to form a hydrostatic pressure coalescible filter cake; uniaxially paste extruding said filter cake composition to produce a uniaxial planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant; applying a means of re-orienting said uniaxially planar oriented polytetrafluoroethylene

structure containing approximately 17 to 20 percent lubricant approximately 90 degrees to the initial uniaxial extrusion direction wherein:

said means of re-orienting is rolling.

72.(*new*) A biaxially planar oriented structure formed by releasing said colloidal size polytetrafluoroethylene resin particles from coagulated dispersion aggregates at high shear in a solvent to create a mixture, wherein said particles are approximately 5 to 10 microns in size and said solvent is capable of wetting polytetrafluoroethylene surfaces; subjecting said mixture to high shear mixing; adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume; filtering said mixture to retain approximately 17 to 20 percent liquid to form a hydrostatic pressure coalescible filter cake; uniaxially paste extruding said filter cake composition to produce a uniaxial planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant; applying a means of re-orienting said uniaxially planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant approximately 90 degrees to the initial uniaxial extrusion direction wherein:

said means of re-orienting is calendering.

73.(*new*) A biaxially planar oriented structure formed by releasing said colloidal size polytetrafluoroethylene resin particles from coagulated dispersion aggregates at high shear in a solvent to create a mixture, wherein said particles are approximately 5 to 10 microns in size and said solvent is capable of wetting polytetrafluoroethylene surfaces; subjecting said mixture to high shear mixing; adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume; filtering said mixture to retain approximately 17 to 20 percent liquid to form a hydrostatic pressure coalescible filter cake; uniaxially paste extruding said filter cake composition to produce a uniaxial planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant; applying a means of re-orienting said uniaxially planar oriented polytetrafluoroethylene structure containing approximately 17 to 20 percent lubricant approximately 90 degrees to the initial uniaxial extrusion direction wherein:

said means of re-orienting is re-extrusion.

74.(*new*) The biaxially planar oriented structure of claim **71** further comprising at least one electrically conductive particulate.

75.(*new*) The biaxially planar oriented structure of claim **74** wherein:

said at least one electrically conductive particulate is from a group of carbon, graphite and ceramic oxides.

76.(*new*) The biaxially planar oriented structure of claim **71** further comprising:

inert particles.

77.(*new*) The biaxially planar oriented structure of claim **72** further comprising:

inert particles.

78.(*new*) The biaxially planar oriented structure of claim **73** further comprising:

inert particles.

79.(*new*) The biaxially planar oriented structure of claim **71** further comprising polymeric resin particles.

80.(*new*) The biaxially planar oriented structure of claim **72** further comprising polymeric resin particles.

81.(*new*) The biaxially planar oriented structure of claim **73** further comprising polymeric resin particles.

82.(*new*) The method of claim **67** wherein said means of re-orienting is rolling, further comprising a step after step b of:

c. adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume; and further comprising a step after step f of:

g. laminating said biaxial planar oriented polytetrafluoroethylene structure by compression.

83.(*new*) The method of claim **67** wherein said means of re-orienting is calendering, further comprising the step after step b of adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume, further comprising the step after step f of laminating said biaxial planar oriented polytetrafluoroethylene structure by compression.

84.(*new*) The method of claim **67** wherein said means of re-orienting is re-extrusion, further comprising the step after step b of adding solid particulates approximately less than 25 microns in size during mixing to consist of up to 90 percent of a total solids volume, further comprising the step after step f of laminating said biaxial planar oriented polytetrafluoroethylene structure by compression.

85.(*new*) The method of claim **82** wherein said compression is at a pressure ranging from 100 to 1,000 psi.

86.(*new*) The method of claim **83** wherein said compression is at a pressure ranging from 100 to 1,000 psi.

87.(*new*) The method of claim **84** wherein said compression is at a pressure ranging from 100 to 1,000 psi.

88.(*new*) The method of claim **82** further comprising a step after step h of:

i. applying heat up to 300 degrees Centigrade to plasticize and assist the forming and shaping of the sheet.

89.(*new*) The method of claim **83** further comprising a step after step h of:

i. applying heat up to 300 degrees Centigrade to plasticize and assist the forming and shaping of the sheet.

90.(*new*) The method of claim **84** further comprising a step after step h of:

i. applying heat up to 300 degrees Centigrade to plasticize and assist the forming and shaping of the sheet.

91.(*new*) The methods of claims 63, 64, 65 and 66 and 82 - 90 and 92 - 100 comprising drying and then sintering the fabricated structure at a temperature above 342 not to exceed 400 degrees Centigrade.

92.(*new*) Methods of shaping hydrostatic pressure coalescible biaxially planar oriented polytetrafluoroethylene resin sheet structures, containing 17 to 20 percent lubricant, prepared by the process of 62 by the process of claims 63, 64 and 66 and 82 - 90; by deep draw, vacuum and compression; further assisted by the methods of claims 85 - 90.

93.(*new*) Deep drawing hydrostatic coalescible sheet containing 17 to 20 percent lubricant; prepared by claims 62, 63 and 66 and 82 - 90; by fastening the sheet to the lip of a porous matched mold cavity and slowly apply pressure to the male component to draw down and conform the sheet to the mold cavity; dry the formed shape and free sinter at 380 degrees Centigrade for 20 minutes; the part is form stable and has a tensile strength of 5000 psi in any planar dimension.

94.(*new*) Vacuum forming lubricated sheet prepared by the methods of claims 64, 65 and 66 and 82 - 90 in a porous metal female mold cavity similar to claim 79; the sheet is snuggly fastened to the lip of the mold; a vacuum force applied through the porous metal to force the sheet to conform to the mold geometry; said formed sheet processed further as in 79 with equivalent results.

95.(*new*) A method of forming a biaxially planar oriented diaphragm with convex, concave, concentric ribs one inch in depth; in a porous metal matched pair mold; by compressing a sheet of hydrostatic pressure coalescible product of claims 63, 64 or 66 made according to the

method of claim 62; then dried and sintered as in 77; said diaphragms have exceptional flex fatigue life of the order of 10 times that of diaphragms that are not biaxially planar oriented.

96.(*new*) Porous biaxially planar oriented polytetrafluoroethylene matrix structures employing the principles of claim 70 employing the fabrication methods of claims 63, 64, 66, 67and 68 and 82 - 90 wherein the particulate components are fugitive and added during claim 70 as part c; said fugitive pore formers are removable by dissolving in water (such as sodium chloride), chemical reaction (such as hydrochloric acid on calcium carbonate) or by thermal decomposition during sintering (such as methyl methacrylate); porosities of up to 90 percent are possible.

97.(*new*) Biaxially planar oriented porous structures of claim 96 comprising at least one fugitive pore former.

98.(*new*) Biaxially planar oriented porous structures of claim 96 containing a ceramic oxide, carbon or graphite (all electrically conductive materials).

99.(*new*) The method of claims 96 and 97 wherein the fugitive pore former additive particle size determines the resulting pore size.

100.(*new*) A porous membrane structure of biaxially planar oriented polytetrafluoroethylene of claim 96 wherein the structure contains polymeric particulate additives.

101.(*new*) An asymmetric porous structure of biaxially planar oriented polytetrafluoroethylene accomplished during steps d and e of claim 62 employing two different particle size fugitive pore formers as in claims 97 - 99 added in steps d and e of claim 62; processing said composition according to claim 66; concluded by sintering said structure as in claim 91; removing fugitive pore former by leaching or chemical reaction as in claim 96.

102.(*new*) Product of 62 biaxially planar oriented with tensile strengths in all planar dimensions essentially equal.

103.(*new*) Product of 62 containing solid particulate material homogeneously dispersed and free of a multiplicity of discrete lamellae oriented parallel to faces of processed structure, which may act as planar faults between lamellae.

104.(*new*) Improvement of at least 20 percent in the burst strength of biaxially planar oriented tubing processed according to claim 68.

105.(*new*) Product made according to claims 82 - 90 and formed by claims 92 - 95, which posses exceptional form and dimensional stability as formed as well as after sintering; shrinkages in the plane of the surface range from 1 to 4 percent; the major shrinkage occurs in thickness, which has little influence on product shape.

106.(*new*) Product made according to claim 62 possessing excellent resistance to tear, and a constant rate of elongation with no detectable yield to failure in tension.

REMARKS/ARGUMENTS

Applicant has reviewed and considered rejection of claims 10, 11, 13-15, 17-22 and 24-26 under 35 USC § 112 for being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention and has amended the specification so as to include a definitions section of various terms, including the term "additives" and give examples of what constitutes an additive as opposed to what constitutes a filler.

Next, Applicant has reviewed and considered the nonstatutory double patenting rejection based on the prior Roberts 3,556,161 ('161) patent and states that the present application is distinguishable from the '161 patent and is therefore not subject to the nonstatutory double patenting rejection as, fundamentally, the '161 patent characterizes the molecular structures as defined by x-ray ratios A and B and discrete lamella less than 10 microns thick whereas the present invention has no lamella in the end molecular structures.

Although it is true the '161 patent and the present application are processes which produce biaxially planar oriented molecular PTFE structures, it is the method of manufacturing the structure that is developed in the product to provide the desirable biaxial planar orientation that differs. In the '161 patent, biaxial planar orientation is developed by multiple directional calendering steps (steps 6-8) characterized by microscopically visible lamellae (fault lines) in the product. On the other hand, the present application teaches biaxial planar orientation developed in without multiple directional calendering steps wherein no lamellae is detected microscopically in the product.

The lamellae can be viewed microscopically in cross sections of all compositions made according to the '161 patent, which clearly identify and verify that the composition was made according to the method taught in the '161 patent and further reveals the number of biaxial orientation passes involved in fabricating that product. On the other hand, the lamellae are not present in the end product of the present invention.

In addition, the number of passes required to produce the desired level of biaxial orientation differs between the '161 patent and the present application. The number of

passes is of great significance in the field of manufacturing PTFE resin particles as it has a very significant influence on the cost of producing the product, particularly in labor (time) costs and the costs associated with purchasing the necessary equipment to perform the orienting steps.

The processing method of the '161 patent requires multiple calendering passes, each pass consisting of: 1) doubling the thickness of the previously calendered sheet and folding it in half congruently, 2) turning the doubled sheet 90 degrees to the previous calender pass, 3) passing the doubled sheet through the calender (the calender set at the same gap separation on all successive passes) and 4) repeating the above sequence six to eight times in order to impart the degree of biaxially planar orientation required to develop a tensile strength of 5000 p.s.i. as specified in '161 for PTFE resin.

On the other hand, the end product of the present invention is produced by eliminating multiple calendering steps found in the '161 patent (see application page 2, lines 11-12). Thus, the present application entails more handling time and different types of manufacturing equipment than employed in the '161 patent process. The process is based on the ability to move particulate solids like colloidal PTFE resin in concert with other solid particulate materials, in unmelted form, in plug flow in a hydrostatic coalescible state to form useful forms and shapes as biaxial planar oriented structures. The process is performed without the need of multiple calendering steps.

Therefore, the similarities between the '161 patent and the present application terminate after resin preparation and formation of the hydrostatic coalescible filter cake is formed. Processing of the filter cake by both methods is radically different and the products differ in structural homogeneity. In addition, as '161 clearly states that products containing solid particulates cannot be paste extruded (see column 1, lines 64-75) and the present invention uses paste extrusion (plug flow) as the basis of the process claimed, a double patenting rejection is not applicable and thus Applicant respectfully requests it be withdrawn.

With respect to the claim rejections, Applicant has canceled all original claims and has submitted new claims in this Response and Amendment. The new claims highlight the distinctions between the Roberts '161 patent and the current application.

In view of the above amendments and remarks, Applicant believes the examiner will now find this patent application in a position for allowance and its expeditious passage to same is requested.

Should the examiner disagree or have any questions, comments or suggestions that will render this application allowable, a call to the undersigned attorney of record is invited.

Respectfully submitted,
Robert Roberts, Applicant

By: Edward M. Livingston

Edward M. Livingston, Esq.
The Livingston Firm
963 Trail Terrace Drive
Naples, FL 34103
(239) 262-8502

Attorney for Applicant
Reg. No. 28,523

CERTIFICATE OF MAILING UNDER 37 CFR 1.10

I HEREBY CERTIFY that the above Response and Amendment is being deposited with the United States Postal Service by express mail on the 25TH day of April, 2005, addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Carolyn D. Mobley
Legal Assistant

Enclosure: Full Text of Added Paragraphs Without Underlining

TERMS AND LANGUAGE OF THE PROCESS

LAMELLAE - Thin, plate-like structures in the micron thickness range. If present, lamellae may be viewed microscopically in microtomed cross-sections. Also referred to as fault lines.

LAMINATIONS - Layers of sheet composition in the mil thick range and above. Lamination may be viewed visually.

CALENDERING (TO ORIENT) - Passing a material between two uniform clearance even speed rolls rotating at a surface speed of approximately two feet per minute, reducing the thickness of the processed material by approximately 50 percent with each pass through the calendar at 90 degrees to the previous pass, to produce shear and working for the purpose of introducing biaxial orientation.

CALENDERING (TO COMPACT ONLY) - A single pass through a calender for compaction only, to laminate layers of a composite consisting of two or more layers. Shear and working of the resin is not the objective and orientation should not occur.

ROLLING - Results are equivalent to calendering, the choice is a matter of preference to accomplish a particular operation. Rolling is performed on a flat level surface. Accurate sheet caliper is more difficult to maintain than with calendering. Two spacers at both ends of the roll control thickness.

> **Note:** When performed in identical sequence, rolling and calendering have proven to be equal.

FILLER - In its original context, a filler was a material added to extend the ability and reduce the cost of a polymeric material. As time passed, certain fillers were found to have functional advantages such as reducing deformation, reducing cold flow or increasing friction or improving thermal and electrical properties of the polymer.

ADDITIVES - Additives have usually had a special function, such as to add color, to improve adhesion, to foster nucleation and so forth.

> **Note:** In essence, both fillers and additives are materials added for specific purposes. As years have passed, these two terms have, at times, been used interchangeably.

HYDROSTATIC PRESSURE COALESCIBLE COMPOSITION - A homogenous mixture of polytetrafluoroethylene (PTFE) colloidal resin particles, which may or may not contain submicron particulate solids up to 25 microns in size, in a liquid that wets the surface of PTFE and solids, the liquid component maintaining a volume percentage between 17 and 20 percent of the mix in compressed void free form. The condition is dependent upon the particle packing of the total solids component. Below 17 percent there is insufficient liquid to fill voids between the particles, thus promoting cavitation. Above 20 percent there is an overabundance of liquid, which promotes turbulence. In the 17 to 20 percent liquid zone, capillary forces in the spaces between packed particles are developed which draw the particles together. The resulting cohesion of particles is responsible for the surprising strength developed before a PTFE matrix is developed to further aid the development of strength.

PASTE EXTRUSION - Extrusion of a hydrostatic pressure coalescible composition is called paste extrusion which is performed at room temperature; the colloidal PTFE resin component has never been melted. The extrusion mold and its die components are streamlined to prevent cavitation and turbulence. This form of extrusion involves plug flow; the flow is uniaxial, or biaxial planar (also radial in special forming operations). Since the flow is of the plug type, particles all move together and no mixing occurs. For example, a tube in the extruder barrel remains a tube when extruded, but has a much smaller diameter and a thinner wall. Coagulated dispersion resin, often called fine powder, is actually a loosely aggregated particle whose average aggregate size is 500 microns, which is far from a fine powder.

PARTICLE SIZE - Particle size in paste extrusion is very important, but not critical to, the extrusion process if particle size remains in the recommended range, preferably up to and including 25 microns as described in this invention. Sizes above 25 microns can be employed in certain applications but rarely larger than 50 microns. Examples I and II demonstrate why PTFE particles should be colloidal and the advantage derived in obtaining a homogenous compound in the liquid blending method. For pore forming applications, the desired fugitive particle size is generally below 10 microns and for special microfiltration applications particle sizes below 1 micron are desirable.

MATRIX TENSILE STRENGTH - The tensile strength based on the total cross-section, corrected for the percentage fo voids in the structure employed for determining the tensile strength of porous compositions of PTFE.

LUBRICANT - The wetting liquid employed in paste extrusion is often described as a lubricant.

FISH-TAIL DIE - A stream-lined die shaped like a fish tail employed for paste extruding tape and film.

WETTING LIQUID - A low surface tension liquid (0 to 19 dynes/cm) that will spread on contact with a PTFE surface. Isopar H, an isoparafinic liquid often employed as a solvent but used here as a wetting and neutralizing medium to permit uninhibited mixing of particulate materials, sometimes is referred to in paste extrusion as a lubricant. Isopar H is selected here because of its inherent purity, low heat of vaporization for fast evaporation, low odor, high auto-ignition temperature and compliance with Food and Drug Administration (FDA) requirements for food and skin contact.

PARTICULATE MATERIALS

(Additives and Fillers)

An advantage of the present invention, as well as the co-pending application Serial Number 10/401,995) and the Roberts 3,556,161 patent lies in recognizing the inherent ability to compound, or mix, and process particulate materials in different material forms, such as solids, fibers, platelets, porous particulates, nanoparticles, and the like, with other special particulate particle forms of particulate PTFE-type resins homogeneously in a wetting liquid environment. The group of mixed particulate materials has grown over the years.

In the early years up until the 1960s, solid materials were tagged with the name "fillers" and consisted primarily of particulate carbon, graphite, bronze, chopped glass fibers and several other basic materials, employed as inexpensive extenders. In the years that followed, a much broader range of materials have been included and the term "additives" has come into use, for example, pigments for color coding and polymers. Ever since the 1960s, both fillers and additives have been used interchangeably. Today, fillers and additives are added to provide many functional purposes and serve to improve

and share the valuable properties of PTFE as a matrix for new products. For the above reasons, it is more accurate to name the solid particulate and its special function.

Polymeric Additives (Particle Solids)

A. Particulate fluorocarbon resins that show adhesion to PTFE resin, 1) perfluoroalkoxy tetraethylene copolymer resin (PFA), 2) ethylenechlorotrifluoroethylene copolymer resin (E-CTFE), 3) ethylenetetrafluorothylene copolymer resin (E-TFE), 4) poly(vinylidine fluoride) resin (PVDF), 5) tetrafluorothylenehexafluorotruoropropylene copolymer resin (FEP), and 6) poly(chlorotrifluorothylene) resin (CTFE).

B. Particulate polyether resins that show adhesion to polytetrafluoroethylene resin (PTFE), 1) polyether ether ketone resin (PEEK), 2) polyether ketone resin (PEK), and 4) polyethersulfone resin (PES).

C. Particulate polymethyl methacrylate is a fugitive resin that will decompose when heated above its melting point. In particulate form, it will mix with PTFE resin and leave voids in the PTFE matrix replicating the size of each fugitive particle.

D. Particulate polytetrafluoroethylene (PTFE) resin molding grade granular may be added beneficially up to about 50 percent of PTFE content in many compositions with colloidal particles alone or with other particulate materials. This addition will save resin cost since granular PTFE is less expensive. Particulate modified granular forms may also be added, for example "TFM", marketed by Dyneon, for compression molding applications as a modified PTFE (1705) resin.

Inorganic Fillers (Particulate Solids)

A. Particulate crystalline inorganic materials that are similar in chemical resistance to PTFE, a nitride, a diboride, silicon carbinde, zirconium carbide, tungsten carbide and boroncarbide.

B. Particulate metal powders, such as gold, silver, platinum, iron, aluminum, copper, bronze, titanium and the like.

C. Particulate materials added to impart thermal and electrical conductivity, such as carbon, graphite, silicon carbide, gold, silver and metal oxides.

D. Particulate fillers to control the friction and wear of PTFE articles, such as silicon carbide, graphite, molybdenum, chopped glass fibers and mica.

E. Particulate fillers, such as mica to improve electrical properties and carbon and graphite to conduct electricity, ceramic oxide catalysts suspended in PTFE porous membranes employed in fuel cell constructions as catalysts.

F. In some instances, for example, in making PTFE porous composition, particulate materials are added that are fugitive and can be removed by chemicals (calcium carbonate) or water, (sodium chloride).

In summary, any material capable of withstanding the fusion temperature range of PTFE (342 to 400 degrees Centigrade), may be included as long as it is useful in some way. **Caution:** do not mix explosive materials, such as thermit process components. Most importantly, in order to achieve good homogenous mixing and avoid interference with the plug flow of the paste extrusion process, it is preferable that particles be less than 25 microns in size. This size prevents cavitation and turbulence, which is detrimental to the paste extrusion process. There will be cases where particles somewhat larger than 25 microns will be an advantage, such as where the solid material added is included to improve thermal conductivity. There will also be cases where it is highly desirable to have extremely small particles, for example, in preparation of porous membrane structures and filters where the particle size will determine the pore size after the particles are extracted from the PTFE matrix.

It is equally important that the PTFE particles be small for the same reason why colloidal PTFE works and coagulated dispersion resin is a failure in the paste extrusion process where solid particulate are included. Today's art paste extrusion processes are incapable of paste extruding solid particulate particles successfully because the commercially available PTFE resin particle size averages 500 microns. A solids content of 1 to 2 percent used for pigmentation is the only useful application practiced today in the art.

COPY

Notice of Allowability	Application No.	Applicant(s)
	10/810,763	ROBERTS, ROBERT
	Examiner	Art Unit
	Stefan Staicovici	1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed 2/8/2006*.
2. ☒ The allowed claim(s) is/are *62-70 and 82-89 (now renumbered as 1-17)*.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
   1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Stefan Staicovici
STEFAN STAICOVICI, PHD
PRIMARY EXAMINER 2/17/06
AU 1732